

STUDY DESIGN AND DATA COLLECTION

The primary objectives of NAWQA's ACF River Basin study were to document and describe natural and human influences on water quality and the health of aquatic ecosystems in the basin. A nested monitoring network was designed to maximize understanding of spatial and temporal variability of water quality among various physiographic, hydrogeologic, and land-use settings within the basin (Wangness, 1997). Additional information about the study design, the water-quality and quality-control data, and results are available on the Internet at: <http://www.gsa.usgs.gov/nawqa/>.

Land-Use Effects on Stream Quality

The sampling network was designed to characterize the effects of land use on stream quality at various scales and physiographic settings. Water chemistry, community-assemblage (fish and invertebrates), habitat, bed-sediment, aquatic-organism tissue,

and reservoir-core data were used as indicators of stream quality. Basic Fixed Sites on large rivers were upstream and downstream from Atlanta and near the mouth of the Apalachicola River. Basic and Intensive Fixed Sites were chosen on tributaries that represent effects of poultry, suburban, urban, forest, and cropland, respectively. Basinwide synoptic sites were located within watersheds with similar predominant land uses, in larger tributaries with mixed land uses, and along the three main-stem rivers. Focused synoptics were conducted to evaluate stream quality in relatively small areas. Bed-sediment and aquatic-organism tissue sites are fewer in number but have a similar distribution to basinwide synoptic sites. Reservoir cores were collected and analyzed from all major reservoirs (page 21).

Land-Use Effects on Ground-Water Quality

The ground-water network was designed to characterize the effects of land use on ground-water quality at various scales and hydrogeologic settings. Land-Use Studies characterized shallow ground water underlying predominantly suburban and urban land use in Metropolitan Atlanta and underlying cropland in the Coastal Plain. The Study-Unit Survey characterized ground-water quality in the Upper Floridan aquifer, the most used aquifer within the ACF River Basin. The Flow-System Study was located in the Lime Creek watershed, a predominantly agricultural basin. Wells, tile drains, and springs were sampled to examine the fate of agricultural chemicals in ground water.

